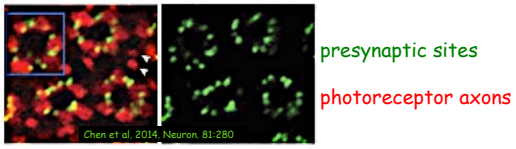
Tools at the BDSC

Neurobiology

- Sensors
  - calcium – 104 stks
  - voltage – 18 stks
  - cAMP – 4 stks
  - glutamate – 5 stks
- Lines for altering neuron excitability – 20 stks
- Channelrhodopsin and Halorhodopsin – 44 stks
- Neuropeptide promoter-driven GAL4s – 26 stks
- Chemosensory promoters driving:
  - GFP – 48 stks
  - GAL4 – 284 stks
- GAL4/lexA/QF expressed in subsets of neurons – >200 stks
- GRASP for activity-dep. trans-synaptic labeling – 5 stks
- Lines expressing tetanus toxin – 10 stks

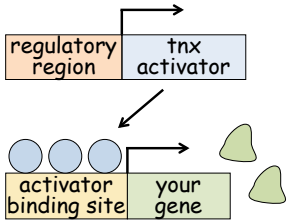
STaR synaptic termini tagging – 19 stks



Systems for control of expression in time and space

Binary systems

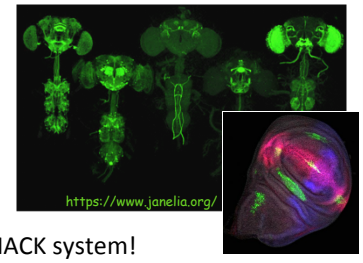
- Make a UAS-, lexAop-, or QUAS-based transgene and control its expression with thousands of available drivers
- Refine expression using intersectional strategies (e.g., split activators, multiple binary systems, clonal analysis, etc)



GAL4 – 7,793 stks **UAS** – 4,960 stks
- refine with GAL80
- 193 "Switch" GAL4s activated by steroids

lexA – 1,648 stks **lexAop** – 204 stks

QF – 84 stks **QUAS** – 124 stks
- refine with QS +/- quinic acid feeding
- turn your favorite GAL4 line into QF2 using the HACK system!



Clonal/mosaic analysis

- Use recombination to make clones of mutant cells (or cells expressing a transgene) in a wild-type background
  - FLP/FRT & other recombination systems enable site-specific recombination
  - Control recombinase expression for spatiotemporal regulation
  - Refine by combining with binary transcription systems and/or multiple recombination systems

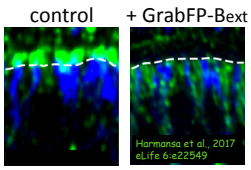
Gene loss of function

- RNAi lines (mostly from the TRiP) – 13,330 stks
- Lines for knocking down fluors & flour-tagged proteins – 28 stks
- gRNA for CRISPR-based knockout (see other poster)
- Deficiencies – 2863 stks (the 473-stk "Df kit" covers 99% of the genome)
- Bellen X lethal collection – 234 stks
- mir KO collection – 148 stks
- UAS-mir sponges – 120 stks

Markers and reporters

- Fluor-tagged proteins (2335 stks)
- Redox sensors
- Muni system for detecting viruses
- Fly-FUCCI cell cycle indicators
- lacO & lacI stocks for tagging specific chromosomal sites in live cell

GrabFP for mis-localizing GFP-tagged proteins



crb-GFP: in apical membranes in basolateral membranes

Other proteins, cellular compartments & processes for which we have markers

actin	caspase activity	chloride	GTPase activity	microtubules	nuclei	PI(4,5)P2	vesicles – late endo
apoptosis	cell cycle	chromosomes	hemocytes	mitochondria	oenocytes	tension sensors	vesicles - PI(3)P
autophagy	cell membranes	ER	JAK/STAT signaling	muscles	peroxisomes	ubiquitinated proteins	vesicles - recycling
calcium flux	centrosomes	glutamate sensors	Jun signaling	neurons	phagocytosis	unfolded protein resp	vesicles - synaptic
cAMP sensors	chemical tags	Golgi	lysosomes	Notch signaling	PI3K activity	vesicles – early endo	voltage sensors